

# Radio Radiations

Edited by

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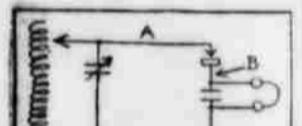
**WHAT MAKES THE CRYSTAL DETECT?**

Unilateral conductivity. What is it?

It is the secret of the crystal set. The property that makes of any substance a "detector" of radio signals.

Certain minerals, and a few other materials possess the characteristics which make them good conductors for current passed through them in one direction only. For example, a piece of carbon may show a resistance of only two or three ohms in a certain current. When the current is reversed, the resistance is then several hundred, and in some instances several thousand ohms.

When substances possessing these characteristics are placed in a circuit where an alternating current is flowing, pulses of one polarity pass with ease while those of opposite polarity are resisted or lost. The substance thus becomes known as a "rectifier" since it "rectifies" the alternating current, leaving in its stead a pulsating, unidirectional current.



A diagram of a crystal detector circuit. It shows a battery labeled 'A' connected in series with a switch and a crystal detector. The crystal detector is represented by a small circle with a wavy line through it. This is followed by a lamp labeled 'B'.

The telephone receivers used in radio work are essentially short current machines thus the necessity for a rectifier—or as it is also called—detector, in the radio receiver.

Some minerals used as detectors are so sensitive that the currents fed to the magnetic telephones are much larger than can be accounted for by one-half of the incoming signal current alone. One explanation of this is that the detector has the signal current induced in it by the magnetic field of the source of the crystal. The rest is produced at the point of contact of the crystal with the "feeder" wire.

Under certain conditions when two unlike substances are in contact, the application of heat will produce a flow of electricity. A combination of two dissimilar ferro-conductors giving a pulsing current each time as a result of other heat-producing pulses which pass through it.

It is important to arrange the crystal detector so that all of the energy which is collected in its circuit passes through. This is accomplished by making sure that there is nothing connected across the detector which would act as a small condenser.

Small condensers are formed by a pair of twisted insulated electrodes or large metal surfaces which are closely adjacent to each other and used in the connection reconnection of the crystal detector system, they will afford low resistance paths for the high frequency currents.

Currents flowing through these paths will never be rectified until so far as the magnetic telephones are concerned will serve no purpose.

In the accompanying photograph the bridegroom, Edwin J. McNamee, advised the regenerative circuit upon which Edward Howard Armstrong, formerly in charge of radio radio in France, had made toward the advancement of the wireless art.

He discovered and shared the trade of the electrons within the mysterious vacuum tube so dear to the hearts of all radio fans.

It was the first to make the little tube perform in the manner of a diode, separating the two forms of oscillation, one in waves, thus providing a simple means of producing an electric wave suitable for telephone.

He was the first to demonstrate how this vacuum tube could be relied upon to amplify an extremely weak signal over and over again.

With this result, that it would become very strong, thus making possible the regenerative circuit as now used in most homes.

Finally he has taken this form of receiver, and improved it so that it can receive contributions of a million miles and upward.

**Science Aids Cupid in Aero-Radio Wedding**

ABOVE—THE BRIDAL COUPLE IN PLANE IN WHICH THEY WERE MARRIED; BELOW—THE REV. JORDAN READING THE CEREMONY.

By NEA Service  
ST. PAUL, MINN., June 11.—Miss Zelma Olson of Minneapolis wanted to be married in an airplane.

She also wanted to be married by the Rev. E. A. Jordan, weight approximately 200 pounds.

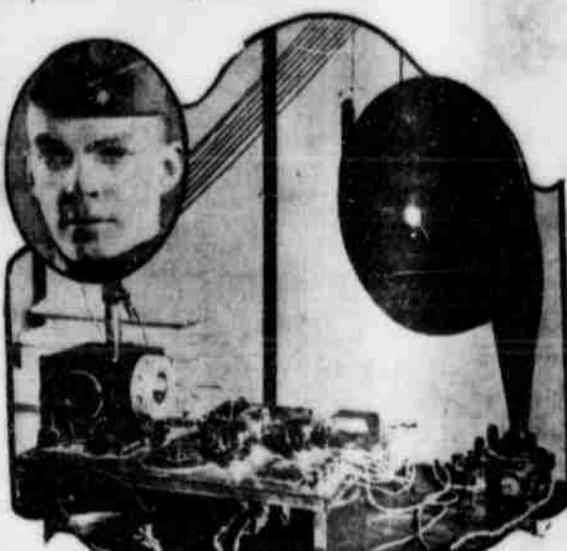
A cockpit on the plane, in which the officiating minister must sit, would accommodate in addition to the pilot, some over four feet six inches, weight 15 pounds.

The bridegroom, Edwin J. McNamee solved the problem.

With 10,000 spectators of the air derby at St. Paul, Minn., listening by means of four amplifying horns, the couple were married by radio, as they sailed high above the ground.

The Rev. E. A. Jordan read the service from the program book for the use of judges of horse races.

Thus the first authenticated air-radio phone wedding in history.



A man in a flight helmet and goggles, sitting in the cockpit of an airplane.

length of 300 meters (sending out a wave having a frequency of 1,000,000 cycles a second) happens at the same time that a wave which is being sent out from Station B at a frequency of 1,000,000 cycles.

The effect upon the telephone receivers will be similar to that indicated in C where, it will be noted the current rises and falls at the rate of 500 times per second.

The wave of Station A is inaudible as is that of Station B, but the beat which occurs between the signals of both is heard. The pitch of the beat is always equal to the difference of the interacting waves.

Modern long distance telegraph receiving stations use this method for the reception of distant signals. The signal wave from the far off transmitter taken into this receiving apparatus reacts upon a locally generated wave for the production of audible beats.

These beats are produced, then only when the signals are coming in. When the signal is strong, the locally generated signal cannot be heard because its rate of vibration is far above audibility.

All regenerative receivers may actually act as generators of electro-magnetic waves. The "resonances" of this wave generated will depend upon the wave length to which the receiver is tuned. The simpler types of regenerative receivers are the worst offenders.

To gain simplicity the antenna is usually connected directly to the source of the electric oscillations. This more selective and continuous type of regenerative receiver, while capable of acting as transmitter, offend to a lesser degree.

Listeners should avoid, or try to avoid it in their receivers. It may bother the neighbors.

The other day I read about a it's down near like a cat when you hooked up to give my Radio try. I fixed a pair of earmuffs they'd fit on boss's head; in over in the shed of boss an' me we're now at milkin' time out yonder in the shed of boss an' me we're "Listen in" to singin' er a lamb. My cows are all "contented" now as any in this land. A few of my good neighbors wondered what results would be by milkin' a radio, but you can just imagine what all night to think. Well, makin' a new straw hat he sleeps straight through for bout a week to get caught up at that. I come to the conclusion since their place to eat as live seemed satisfactory all the time they're broadcasted I'd otherwise be missin'.

(Copyright, 1922, Westinghouse Electric &amp; Manufacturing Co.)

**Radio Bill's Radiolays**

The other day I read about a certain brand of milk, the kind you know, they said, "it's fine as silk. Their reason that "contented" mean, then all was "contented cows." I couldn't decide just where they got my beans. They say that Tommy would sleep a lot when we'd give our lots of grass and a special brand of feed an' that's as much as any self-respecting cow should need. I had the barn rebuilt an' got it fixed up pretty nice; I'll get a patient milker when I can stand the price. There's a barn an' all the sheep are wired for electric light; right twixt up to me to give my electric & manufacturing co.

OTERO

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